

**Notice of Allowability**

Application No.

10/672,836

Examiner

Todd Ingberg

Applicant(s)

DE JONG, EDUARD K.

Art Unit

2193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/9/2007.
2. ☒ The allowed claim(s) is/are 1-76.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 5. <input type="checkbox"/> Notice of Informal Patent Application                     |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input type="checkbox"/> Examiner's Amendment/Comment                              |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance  |
|  | 9. <input type="checkbox"/> Other _____   |

  
**TODD INGBERG**  
**PRIMARY EXAMINER**

## **REASONS FOR ALLOWANCE**

1. The following is an examiner's statement of reasons for allowance:

The claimed invention used obfuscation to hide the programs instruction counter by applying a permutation to the current instruction counter value and the ability to locate the value to reference an application program instruction, enabling the application to be executed. The permutation is applied at runtime and is not set up by the compiler.

### **Prior Art of Record**

The following covers the closest prior art of record.

#### **U.S. Patents**

The closest prior art in U.S. Patents are summarized below. The following summarizes the main invention of the closest art of record.

#### **Folmsbee Series**

The Folmsbee series requires compiling with encryption and the use of decryption at run time.

- A. 6,598,166 B1 Folmsbee – requires compilation of the program to be encrypted and the program at run time requires the key to decrypt the program. The location of the program's current instruction counter value is not the focus of the invention. The ability to decrypt the executable is the thrust of the invention.
- B. 6,757,831 B1 Folmsbee – the encrypting to an instruction buffer is similar to the invention about and the claimed invention is allowable over Folmsbee's techniques for the same reasons.
- C. 6,609,201 B1 Folmsbee – In addition to the technique taught above a dependency among instruction buffers is implemented.
- D. 6,665,796 B1 Folmsbee – The microprocessor instruction results provide multiple paths. Some paths are wrong , but look correct. The implementation makes the run time environment non deterministic.
- E. 6,675,298 B1 – Folmsbee – The opcodes of the program are manipulated making the program unable to be run with out the ability to determine the opcodes of the program.

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Granger Series

The Grainger series concerns itself with software piracy (Distribution of software) and take safeguards with obfuscation. Table 2 shows the Obfuscation rules table.

G, H. I 6,643,775 B1, 6,334,189 B1, 6,480,959 B1 Grainger – For the most part Grainger's use of encryption is for making copied software unusable. The implementation is for copy control not run time like the claimed invention.

Non Patent Literature

Software Watermarking: Models and Dynamic Embeddings, Christian Collberg et al, ACM, 1999 – Describes a “subtractive attack” on page 311 where a program and its approximate program location is cropped in order to protect it. The scheme is more of a data control issue as opposed to an instruction execution protection scheme.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

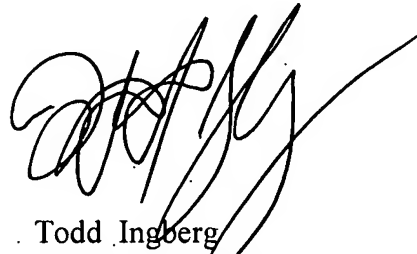
***Correspondence Information***

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Todd Ingberg whose telephone number is (571) 272-3723. The examiner can normally be reached on during the work week..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Todd Ingberg  
Primary Examiner  
Art Unit 2193

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